

Information Systems collaborations as boundary spanning: initial survey in a sample of Journals

Research-in-Progress

José-Rodrigo Córdoba-Pachón
School of Management,
Royal Holloway, University of London
Egham,
Surrey, TW20 OEX, UK
j.r.cordoba-pachon@rhul.ac.uk

Alberto Paucar-Cáceres
Manchester Metropolitan University
Business School,
Aytoun Building, Aytoun Street,
Manchester, M1 3GH, UK
a.paucar@mmu.ac.uk

Abstract

Information-systems (IS) has become a 'broad church' that includes academics and practitioners in several areas of theory and application. Although collaborations among these and other groups are hailed as a wealthy sign, it is not clear yet though how collaborations are really contributing to firm up, maintain or expand the boundaries of IS as a relevant discipline. We assess the extent to which activities of collaboration in IS have contributed to its development by contextualizing the notion of boundary spanning (BS) from two perspectives, one which privileges the creation and/or accumulation of knowledge; and other which privileges the gaining of jurisdiction over a set of problems. Results of a pilot survey involving four journals and implications for the future development of collaborations are reported. Results indicate that BS is still seen as a process of knowledge accumulation and with it a view of IS as in continuous process of expansion. Further research is needed to study in more depth the dynamics of IS.

Keywords: Information systems; collaboration; relevance; boundary spanning; bibliometric analysis.

Introduction

It is now commonly accepted that the so-called information and communications revolution that has brought radical transformations in businesses (Porter and Millar, 1985) has also brought about the profession of information systems which involves knowledge of how best to use technologies and systems for the benefit of organizations and individuals. Information systems (IS) as a field of theoretical and applied knowledge is said to impact on many different areas, leading some to claim that the field of IS can be better seen as a knowledge reference discipline (Baskerville and Myers, 2002). Moreover, there seems to be a shift in the conception of people within this field. From being considered 'support' staff that connects cables, hardware and software, we can now help systems users to get the benefits of information systems. To some, we can claim we are professionals who can and should engage in collaborations with other professionals and on equal footing. This in turn can contribute to produce and apply relevant

knowledge to relevant problems of information systems and to enhance the status of IS. Recently, IS professionals are encouraged to span the boundaries of the communities they belong to (Klein and Hirschheim, 2008). Their presence is now required to contribute to projects to advance organizational strategies and to facilitate the use of systems and technologies in new domains of activity.

This suggests that IS could be both a firmly established discipline as well as one which is in continuous flow. Addressing this possibility requires giving answers to a number of questions. Can IS be the result of boundary spanning? How does boundary spanning take place in IS? To what extent do our collaborations could (not) contribute to the development of IS? In this paper we address these questions by contextualizing boundary spanning within two views. The first one is that of boundary spanning as a process of knowledge accumulation. The second one is that of boundary spanning as a process of disciplining. With these views we explore connections between collaborations and boundary spanning in the research reported in IS and associated disciplines including management and operational research. Our results indicate that collaboration and boundary spanning are mainly considered activities to accumulate knowledge, with little regard to how IS is part of a wider system of disciplines. To continue the research we propose two aspects to be further investigated: (1) Definition and exploration of boundary objects in IS which have resulted from or have been used collaborations; and (2) Critical reading of articles reporting collaboration with a view to better understand processes and outcomes under the views proposed in this article. These aspects can help us to shed light on the nature and possibilities of collaborations in IS. The paper is organized as follows: (a) in section 2 we outline some ideas around the current debate about information systems as a discipline; (b) in section 3 we present two perspectives on boundary spanning; (c) in section 4 we present the methodology for surveying IS, MS/OR and general management journals, publishing articles featuring boundary spanning and collaborations; and (d) our results as discussed in section 5 and suggestions to continue the research in the future.

Information Systems as a discipline

To many, information systems (IS) is a body of knowledge that is now on equal footing to many different disciplines (Baskerville and Myers, 2002; Klein and Hirschheim, 2008). The traditional one-way (consumerist) style of discipline that imports concepts and ideas from sociology, philosophy and management among others to look at issues of systems design, adoption and implementation in organizations could be re-defined as a two way continuous process in which IS methods, techniques and approaches are also informing how other disciplines tackle problems in their domain.

Under this alternative perspective, IS is now seen as a diverse set of communities that are driven by distinct paradigms: positivist, interpretive and critical seem to be recognized sets of assumptions that guide research and scholar activity in the area. Many overlaps occur between these communities, and still there are issues related to the use of methods under each paradigm (McGrath, 2005), as well as to the openness of communities to validate and accept other communities' discourses (Introna, 2003). Those proposing a view of IS as a set of communities argue that communities could benefit a great deal by talking to each other and in both academic and practical domains (Klein and Hirschheim, 2008). This also needs a more inclusive perspective of IS where communities would be encouraged to continuously communicate and exchange knowledge, so that they could come together to share and learn from others across organizations or professions (Wenger, 1999) and ultimately building a social identity. Achieving better communication and social cohesion can in turn enable a better understanding of how IS can offer knowledge to professionals in other areas of activity in organizations.

Implied in the possibility that communities inside or outside IS could get access to and use 'external' knowledge is the notion of boundary spanning (Klein and Hirschheim, 2008). Klein and Hirschheim (2008) refer to this notion to encourage academics to talk to practitioners as well as facilitate formation and communication between existing or emerging in IS (i.e. doctoral students, executive managers). In other areas like management and innovation, it is argued that boundary spanning could help people from one discipline to work in collaboration with others (including practitioners) in order to generate rigorous but relevant knowledge (Bartunek, 2007; Gulati, 2007; Tushman, *et al* 2007). More needs to be said about how this notion can contribute to help us assess the activities of IS people with a view of building on what we do best to help IS maintain or extend its relevance. We now present two different views about boundary spanning.

Boundary spanning as disciplinary activity

In the following sections we contextualize boundary spanning within two views. The first one is that of boundary spanning as a process of knowledge accumulation. The second one is that of boundary spanning as a process of disciplining.

Boundary Spanning as knowledge accumulation process

An early definition of boundary spanning by Tushman and Scanlan (1981) accounts for a process in which information is imported into an organization as well as information exchange with an organization's external environment. Boundary spanning is seen as a social process, which also helps individuals to interpret and define continuously their social world. In this (informational) perspective, boundary spanning involves: (a) obtaining information from outside organizational units; and (b) disseminating this information to internal users. The process requires individuals (Boundary spanners) able to establish and use internal and external networks of communication, using the appropriate language in each of these and acting as translators in both ways. Boundary spanners also interact with professional associations in a particular domain of knowledge, which are also seen as a source of valuable knowledge and which can also contribute to disseminate knowledge that is produced by communities.

A similar but complementary perspective to that of informational boundary spanning is that proposed by Star and Griesemer (1989). They regard the process as a dynamic one where "[different] actors contributing to science translate, negotiate, debate, triangulate and simplify in order to work together" (p.389, brackets added). In this prospective, boundary spanning's aim is to achieve a common representation that could be used by different but intersecting groups. A key activity of boundary spanning is that of translation of representations, resulting in the definition of *boundary objects*. This is an analytic concept of "those scientific objects which both inhabit several intersecting social worlds...and satisfy the informational requirements of each of them... [they are] both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites" (p.393, brackets added). This perspective suggests activities to both facilitate communication between groups and to develop or maintain objects of common interest. In this perspective the aim is not to unify different groups but enable them to contribute to a common goal (i.e. a museum, a library).

This perspective shares commonalities with that proposed by Klein and Hirschheim (2008) to facilitate the identification of the structure of IS in that: (a) Hirschheim and Klein regard IS as a set of constituencies which can be better conceived of as a set of communities of practice and knowledge; (b) These authors also propose the generation of boundary objects like methods or standards to help in the work of IS academics and professionals; (c) In both perspectives boundary objects become knowledge objects which in a way become methods of disciplining or obligatory passage points (Star and Griesemer, 1989) for those new to any of the constituting communities or of the field as a whole; and (d) There are visionary people (boundary spanners) who are able to bring different groups together under the assumption that knowledge creation and accumulation can be achieved.

From the perspective of Boundary Spanning as a process, the role and the notion of boundary spanners is seen as individuals with "technical [discipline oriented] training and cosmopolitan orientation, that is by those who are more professional" (Tushman and Scanlan, 1981) (brackets added). Boundary spanners are people who "do not identify themselves fully with either the academic or practitioner community and who have the courage and the interest to treat both groups as of value and as having something to contribute to the other" (Bartunek, 2007:1329). In the IS practical field, boundary spanners are often being regarded as ideal managers, people who have skills to lead projects, understand clients and ensure project success through technical and business competence as well as leadership, mentorship and integrity (Napier, *et al*, 2007). Boundary spanners could be nominated or self-appointed, and due to their ability to negotiate or use power at their disposal, could influence the production of boundary objects (Levina and Vaast, 2005)

In the realm of IS, boundary spanners could be considered those who go beyond their own speciality or area of expertise. Academically, this could have a threefold interpretation. First, they bring together diverse concepts and generate impacts on different groups, in this way defying in a way a reward system that has a strong orientation that does not value inter-disciplinary work (Baskerville and Myers, 2002).

In this regard IS boundary spanners could produce, intentionally or unintentionally, emergent boundary objects which reflect what happens in a new domain of practice (Levina and Vaast, 2005) rather than simply what goes on in particular fields. Second, they could go beyond the practice of their own discipline despite what some authors suggest (i.e. lobbying in their own field) (Baskerville and Myers, 2002; Klein and Hirschheim, 2008) and engage into joint efforts (i.e. collaborations) which can lead them to change the nature of their own professional activity (Levina and Vaast, 2005). Third, they could be more comfortable with a view of IS as a dynamic field which is both permeable and fluid (Bryant, 2008), in which the constant is change.

Under this perspective the role(s) of boundary spanners are related to envisioning and making sure that participant constituents, whilst not losing their own identity, engage in activities that contribute to the development of a vision. Such vision tends to be one in which knowledge is created and accumulated although not necessarily shared by all groups or members of a community. In this regard, boundary spanners are also those negotiating and producing boundary objects which reflect the products of negotiation and conflict. They are lead actors in the development of communities of practice and knowledge. Although conflict is mentioned as a result of communities inter-acting with each other (Klein and Hirschheim, 2008), conflict can be subsumed under the generation of common communication and working standards. The view adopted on these perspectives is that boundary spanning involves a process of expansion towards different communities, so that IS becomes better recognized. As Klein and Hirschheim (2008) say:

“...as long as there is tacit agreement on the core [IS] subject matter, [communities] will tend to stick together because of shared interests around which the members of a discipline can rally. There is safety for all in numbers and a shared interest in maintaining an active discipline that is visible to outsiders...” (p.289)

Also implicit in the above view is that a degree of co-existence between IS and other disciplines can be achieved. An alternative view of boundary spanning sees it as contributing also to the contraction of IS. In the next section we present this view based on the work of Abbott (1988, 2001).

Boundary Spanning as disciplines' negotiation processes

Abbott (2001) regards disciplines as comprising both academic and professional activities, and with an identity that comes from social recognition. This recognition is gained when a set of individuals who have particular knowledge are regarded as experts to address a specific set of problems in a professional domain of activity (Abbott, 1988). When this happens, it can be said that there is a discipline which has presence (and similar structuring) in both academic and practical arenas (Abbott, 2001). Professionals in academia and industry engage in activities of diagnosing, treating and inferring about problems. In the academic camp focus is on abstracting elements (concepts, methods, inferences) from their different manifestations in practice, as well as suggests new ways of treating problems and further inferring (researching) them. Practice becomes an arena where these abstractions are put to the test and refined. For Abbott, a discipline is in continuous gain, regain or loss of ownership (jurisdiction) on a set of problems (Abbott, 2001). A discipline goes through periods of consolidation in which a number of ideas, methods and techniques (treatments) to problems are developed, refined and disseminated. This refining helps as Abbott (1988) suggests:

“Redundancy [of knowledge] will increase efficacy and will thereby help a profession control its jurisdictions. Inconsistency between different ways of construing problems will lead to specialization and possible differentiation in the profession” (p.56)

What Abbott is suggesting with the above is that there is both internal competition as well as external recognition for a discipline. According to Abbott (1988), disciplines can also lose jurisdiction when the knowledge they hold becomes too generic or portable, making it vulnerable to attack or to recombination by other disciplines. In order to keep its jurisdiction a discipline needs to continuously fill gaps in the knowledge that it holds through development of new diagnoses, treatments and inferences linking these two. Here the work of academics is fundamental not only in generating new knowledge classifications about diagnoses and treatments but in making them more accessible to student and practitioner audiences. Furthermore, disciplines can also venture in challenging other disciplines' jurisdiction on other problems by providing more efficacious ways of diagnosing and treating them. Abbott (2001)

suggests that inter-disciplinary (or collaborative) work is a manifestation of competition between disciplines which occurs when one discipline vacates some space (or problems) to be filled in. The end result of collaboration (called inter-disciplinarity) is the gain (or loss) of jurisdiction of a discipline over the problems being addressed. Through time though, those winning the battle will have to include their defeated disciplines' claims and with them other ways of diagnosing and treating the problems they now own. As a whole, society maintains its relevant knowledge, regardless where it is developed or re-discovered, all of this under the illusion of 'progress' (Abbott, 2001). Abbott's perspective does not consider knowledge as an accumulative process of creation or expansion on different realms of life. Rather, it considers that knowledge is continuously rediscovered through processes of differentiation, competition and absorption between disciplines (Abbott, 2001). This does not mean that disciplines maintain a degree of cohesion. It means that the process of achieving it is not only through communication or sharing knowledge but through competition. This perspective, whilst challenging those individuals who aim to bridge gaps between groups in a community, also enables us to become critical of the purposes and outcomes of activities of boundary spanning. Under this perspective boundary spanning thus becomes subsidiary of the activity of 'disciplining', with a discipline being part of a wider system of disciplines. Collaboration becomes a complex field of battle in which disciplines and sub-disciplines keep each other at bay, lose or gain.

Within this view, the role of boundary spanners is similar to those of those individuals 'conquering' or those 'being conquered' in the process of spanning. Boundary spanners can be considered those crossing the boundaries of their own discipline to gain jurisdiction by taking jurisdiction from other people. But they are also the ones in charge of 'defending the castle' of their own discipline (or sub-discipline) by producing relevant knowledge to their student or practitioner audiences.

Having outlined these two Boundary Spanning perspectives, we now proceed to examine them in the field of information systems.

Survey of articles reporting Collaborations and Boundary Spanning in Information Systems and Management Science

Although one can argue that in general more or less all fields in management exchange knowledge, it is interesting to explore IS association with the field of management science/operational research (MS/OR): right from its origins, information systems has been associated with the research and practice of management science. It can be claimed that IS started as a branch or offshoot of MS/OR which evidenced by the fact that in some cases many IS academics/professional came from the MS ranks in the early stages of IS development as a field of knowledge and practice. Indicative of this association is that fact in the US, under the umbrella of INFORMS (the institute of Operational Research), the top MS and IS journals are published. A similar situations occurs in the UK where the top OR journal (journal of Operational Research Society) and the prominent IS Journal, the European Journal of Information Systems (EJIS) are published by the Operational Research Society (ORS). The other area that we think it is necessary to include in the survey is the field of General Management; for the obvious reason that in this field, general models of management are explored and are fed into all the other fields of management and including IS. We believe that under the current boundary spanning trends, discussed in the previous sections, we expect exchanges between General Management journals and Information Systems.

We limited our review to fourteen leading and influential academic journals from three fields: Information Systems (7), Management Science (5) and General Management (2). It is well known that there are a number of Journals lists (in all areas of management). For the purposes of this research sample, we opted for the "Academic Journal Quality guide" compiled by the Association of Business School (ABS) a UK-based organization (ABS- Academic Journal Quality Guide (March, 2010); <http://www.the-abs.org.uk/?id=257> [retrieved on 12th June, 2010]. Table 1 presents our final sample of fourteen journals; this is a convenience sample that gives a good spectrum of journals and we used it here as an initial point to gauge collaboration between the fields of IS, MS/OR and General Management.

(a) General Management Journals (2)

To relate IS to management as separate disciplines, as well as of illustrating the US and European trends, we have selected two management journals in this survey. We include a 4* ABS listed US based Journal,

The Academy of Management Journal, the flagship of the US Academy of Management; and from the UK, we selected the British Journal of Management a 4* (since 2009) Journal. A cursory review of these journals reveals that it has been publishing articles on collaboration between management fields including boundary spanning.

(b) Management Sciences/Operational Research (MS/OR Journals (5))

INFORMS, the (Institute of Operations Research and Management Science) publishes 12 scholarly journals including the flagships OR/MS American journals. From these, we selected three journals: Management Science (MS), Operations Research (OR) and Interfaces. We also include Omega, the International Journal of Management Sciences, a journal of British origins but US-based since 1994. To assess the development of the MS/OR discourses in the UK the Journal of Operational Research Society (JORS), a well established OR/MS journal in the UK and in Europe. From continental Europe, we included the European Journal of Operational Research (EJOR) the flagship journal of the Association of European Operational Research Societies (EURO).

(c) Information Systems (IS) Journals (7)

Since we want to explore the trends of collaborative work in the IS field, we have selected a sample of six mainstream IS journals. To get a balance of US-EU numbers we decided to include US and EU based journals. The two US-based journals are: Management Information Systems Quarterly (MISQ), Information Research (IS), both 4* plus journals. We selected five 3* EU-based journals: (1) Journal of Management Information Systems (JMIS); (2) Information System Journal (ISJ) (Journal of Information Systems until 1997); (3) Journal of Information Technology (JIT); (4) European Journal of Information Systems (EJIS), and (5) Information and Organization (IO) (AMIT until 2001).

The quality of the journals here listed is corroborated by both: the ABS ranks 3* and 4* in 2009 and 2010 and by another highly regarded list, the MIS Journals ranking (produced by The Association for Information Systems) (<http://ais.affiniscape.com/displaycommon.cfm?an=1&subarticlenbr=432>). The position of the IS journals selected in our sample are rank as follows: The three US journals occupy the top 5 positions of the Average rank¹: MISQ (1.11); IS (2.67); and JMIS (4.86). The four Europe-based IS journals: ISJ; JIT; and EJIS are amongst the top 30: EJIS (10.17); ISJ (18.17); IO (28.25); and JIT (31.50). Overall our sample contains seven top IS journals from both sides of the Atlantic.

Survey methodology

To reveal IS articles reporting collaboration and boundary spanning, we formulated a group of typical keywords associated with the set of collaboration trends sketched in the previous sections. We decided to assemble two set of keywords: keywords to search applications of boundary spanning in Information Systems and Management Science journals; and keywords to search applications of boundary spanning in General management journals. These were:

- (1) Keywords to search IS and MS journals: Boundary spanning; Collaborative Research; Consultancy; Joint project; Team research; Inter-disciplinary; Knowledge transfer; Multi-disciplinary; IS Research issues; Communities of practice; Networks
- (2) Keywords to search General Management journals: Boundary spanning; Information System; Communities of practice; Networks; Information Technology; e-commerce; knowledge management

¹ Average ranking points is calculated as (Total of ranks in each article / (Number of articles in which a journal is ranked) <http://ais.affiniscape.com/displaycommon.cfm?an=1&subarticlenbr=432>

Table 1: Sample of General Management, Management Science/Operational Research and Information Systems Journals

	<i>ABS-List Grade 2010</i>	<i>ABS-List Grade 2009</i>	<i>Editorial Board Base</i>	<i>Issues per year</i>
General Management (2)				
1. Academy of Management Journal	4*	4*	US	6
2. British Journal of Management (*)	4*	4*	UK	4
Operational Research /Management Sciences (5)				
1. Management Sciences (MS)	4*	4*	US	6
2. Operations Research (OR)	4*	4*	US	6
3. European Journal Operational Research (EJOR)	3*	3*	EU	12
4. Omega, The International Journal of Management Sciences	3*	3*	US	12
5. Journal Operational Research Society (JORS) (*)	3*	3*	EU-UK	12
Information Systems (7)				
1. MIS Quarterly (MIS-Q)	4*	4*	US	4
2. Information Systems Research (ISR)	4*	4*	US	4
3. Journal of Management Information Systems (JMIS)	3*	3*	US	4
4. Information System Journal (ISJ)	3*	3*	EU	6
5. Journal of Information Technology (JIT) (*)	3*	3*	EU	4
6. European Journal of Information Systems (EJIS) (*)	3*	3*	EU-UK	6
7. Information and Organization (IO)	3*	3*	EU	6

***Journals survey in the Pilot study here reported**

The survey is based on searching articles that are available on-line. Websites of the fourteen journals will be searched for the ten-year period from January 2000 to December 2010². All websites featured articles available from Jan 1974 to February/March 2011, well inside the range of our survey. So, to ascertain the number of publications that seem to address collaboration and boundary spanning issues, the survey strategy followed these steps:

- All journals' websites databases will be queried for the occurrence of the *four* keywords (as entire phrases) "collaboration"; "boundary spanning"; "knowledge networks"; "IS Research issues" in the *title, abstract or keywords* of the article.
- A filtering of the initial list of papers in these fields was carried out to weed out those papers not focused on *boundary spanning* and *collaborative applications* (e.g. papers that mention those terms in a casual form).
- On those articles which related the keywords, we provided an initial reading in order to interpret their orientation. Where the main focus was on knowledge (i.e. knowledge sharing, creation,

² For the pilot study reported here, we searched only the following Journals: *British Journal of Management (BJM)*; *European Journal Information Systems (EJIS)*; *Journal Operational Research Society (JORS)*; and the *Journal of Information Technology (JIT)* using the phrase "boundary spanning" as the keyword.

acquisition), we regarded those articles as supporting an accumulative view of boundary spanning. This orientation was also given to articles where there was some mentioning to issues of conflict but where these issues were superseded by the focus on knowledge.

- (d) Where the main focus was not on knowledge but issues of politics, negotiation, we regarded their orientation to that of a disciplining view of boundary spanning.

Data Management: Most journals nowadays feature ‘advance publication’ status for accepted papers and make them available on line. For articles in ‘advance publication’ or ‘in press’ status, we included only articles that were allocated an Issue number, and consequently page numbers, in their future hard copy publication. The survey will considered only papers that have been catalogued by the journals as full research articles, hence book reviews, editorials, letters and viewpoints were not included, because authors in the field do not generally cite these documents. Five of the journals (MS, OR, ISJ, and EJIS) publish six issues a year. Three journals (JORS, Omega and EJOR) have 12 issues a year (JORS started with 6 issues/year and became monthly in 1978); and five journals produce quarterly issues (BJM, MIS-Q, ISR, JMIS, IO and JIT). Assuming an average of 8 articles per issue, a total of 7,200³ constituted our final sampling framework. With this sampling frame as a target, titles, abstracts and keywords of articles published over the 10-year period will be queried for the occurrence of our set of keywords.

Pilot survey: Discussion of results

This is a work in progress project and we have not yet queried for the occurrence of the four keywords in the fourteen journals in our sample. In our initial study reported here we searched (15 March 2011) for occurrence of just one keyword: the phrase “boundary spanning” in four of the journals: from the General Management field we surveyed the British Journal of Management (BJM); from the IS field, the European Journal Information Systems (EJIS) and the Journal of Information Technology (JIT); and from the OR/MS field, the Journal Operational Research society (JORS);. In Table 2, the main results of the initial search are presented: there were 39 articles reporting the use of (or making some reference to) boundary spanning in information systems research and management science practice. For reasons of time, we have not analyzed the detailed usage of the phrase in each article yet. The journals with greater number of articles featuring “boundary spanning” were the British Journal Management (2); European Journal of Information Management (EJIS) (20 articles); Journal of Information Technology (JIT) (13 articles) followed by the Journal of Operational Research Society (4 articles)

A detailed review of these articles (see Table 3) reveals that the issue of boundary spanning has been put forward by the IS community in a variety of IS applications and research contexts, mainly as a subject of study and with an Boundary spanning accumulative view of The pilot survey of the three journals reveals no single pattern or trend as the way these concepts are used in practice but on how the notion of boundary spanning helps understand organizational dynamics. The range of usage varies from: exploring “effects of crossing organizational, cultural and time and distance boundaries” (Pauleen, *et al*, 2001) to papers studying “systems definition and negotiation, explaining the situated rationalities underlying IS design as the co-design of business and IT systems”, (Gasson, 2006). These articles point out that boundary spanning is used by IS professionals to engage in a diverse set of problems in organizations. Two of these types of problems involve: a) the use of information systems and technologies in different forms of organizations and how groups engage in knowledge transfer and innovation through them; and b) the emergence of IS organizational structures and practices within structures. Regarding the second problem, boundary spanning is showing how IS professionals are differentiating themselves in organizations, and how boundary objects serve as translators between communities.

Following Abbott, there is scope to ask further questions and continue interpreting how adoption of systems and technologies is disputed by groups; how processes of differentiation take place; how conflicts

³ Sampling frame of a total of 7,200 articles based on: 6 journals x 4 issues x 8 articles x 10 years = 1920 articles; 5 journals x 6 issues x 8 articles x 10 years = 2400 articles; and 3 journals x 12 issues x 8 articles x 10 years = 2880 articles.

and (object related negotiations) are dealt with; how objects are claimed by groups (at the expense of others). For IS as a discipline, it would be essential to explore how IS professionals absorb new areas of responsibility and hence of activity, with consequences for what they regard as professional knowledge and for how they acquire or develop it, possibly by entering into the domain of other professions (management or computer science related).

Following Abbott, in the results we saw very little that indicates any relationship between boundary spanning and its effects on IS as a discipline. This gives us a very good opportunity to ask further questions on how IS is the result of boundary spanning processes; how processes of differentiation in IS take place; how conflicts and (object related negotiations) are dealt with; how objects are claimed by groups (at the expense of others); and what effects of boundary spanning within and outside IS results in IS expanding or contracting its jurisdiction over problems of IS adoption in organizations.

The findings so far suggest that there is a one-way use of the notion of boundary spanning as a tool for understanding rather than as an explanatory notion of how IS professionals engage in collaborations, as well as the effects of this. A further review of the survey would then enable exploration of how collaboration knowledge is being incorporated as 'core' in IS journals, or how it is still disputed by IS and non-IS professionals. This can help us better understand the unfolding of IS as a discipline through time, and better place it among a wider system of professions. We see scope to develop further our understanding of the effects of collaborations in both practice, as well as in the incorporation of new knowledge elements in IS as a body of knowledge. To continue the research we propose a new survey of articles which includes words like collaboration and two analytical aspects to be further investigated: 1) Definition and exploration of boundary objects in IS which have resulted from or have been used collaborations. 2) Critical reading of articles reporting collaboration with a view to better understand processes and outcomes under the views proposed in this article. We intend to use the list of articles surveyed to draw a number of features of both boundary objects and collaboration strategies and use them to extend our criteria to read a new list of papers (see Table 2 and 3). We believe this can help us to shed light on the nature and possibilities of collaborations in IS.

Conclusions

In this paper we have discussed the notion of boundary spanning and its implications for understanding the field of information systems. We have proposed two views that considers IS as a community that accumulates knowledge and a set of competing groups. We have initially surveyed collaborations as a proxy for boundary spanning in IS.

From the results, it appears that the first view of boundary spanning is well supported in IS and its associated communities (management science, operational research among others). But this view uses boundary spanning to generate knowledge. Under this view, boundary spanning is used to look more closely at organizational dynamics, and how IS professionals are in the process of differentiating what they do from the work of others, and in doing so they might be expanding their work and sharing knowledge with others in the process.

To address more clearly the role of collaborations in IS practice, further research is needed to answer the questions such as: (a) what sort of collaborations have been reported? (b) why these collaborations are occurring? and finally and maybe more importantly (c) is the process of boundary spanning reflected in collaboration and other activities contributing to expand IS? In order to answer these questions, from our initial survey we expect to draw a richer set of criteria to identify the two perspectives on boundary spanning that we have proposed. We will also complete the study by both surveying the other *eleven* journals in our sample and by studying in detail the collaboration proposed in these articles. In our future analysis we propose focusing on two aspects: (1) Definition and exploration of boundary objects in IS which have resulted from or have been used collaborations; (2) Critical reading of articles reporting collaboration with a view to better understand processes and outcomes under the views proposed in this article. We hope to obtain further insights to help us better understand the nature of collaboration in IS and with it the role of boundary spanning as a possibility to develop IS as a discipline.

Table 2. A list of 39 articles mentioning ‘Boundary Spanning’ in four journal of our sample: British Journal Management, European Journal Information Systems, Journal of Information Technology and Journal of Operational Research Society

British Journal of Management (2 papers)

1. Managing Change Across Boundaries: Boundary-Shaking Practices, Julia Balogun, Pauline Gleadle, Veronica Hope Hailey, Hugh Willmott, British Journal of Management, Volume 16, Issue 4, Date: December 2005, Pages: 261-278.
 2. Learning and Organization in the Knowledge-Based Information Economy: Initial Findings from a Participatory Action Research Case Study, Richard T. Harrison, Claire M. Leitch British Journal of Management, Volume 11, Issue 2, Date: June 2000, Pages: 103-119.
-

European Journal of Information Systems EJIS (20 papers)

1. Commentary on Wanda Orlikowski's ‘Material knowing: the scaffolding of human knowledgeability’, Robert D Galliers , European Journal of Information Systems 15, 470-472 (16 October 2006)
2. Interactive innovation of technology for mobile work, Jan Kietzmann , European Journal of Information Systems 17, 305-320 (31 July 2008)
3. Enabling agile adoption practices through network organizations, Dirk S Hovorka, Kai R Larsen, European Journal of Information Systems 15, 159-168 (15 May 2006)
4. Contextual influences on technology use mediation: a comparative analysis of electronic medical record systems, Elizabeth Davidson, Mike , European Journal of Information Systems 14, 6-18 (26 April 2005)
5. Enterprise agility and the enabling role of information technology, Eric Overby, Anandhi Bharadwaj, V Sambamurthy, European Journal of Information Systems 15, 120-131 (15 May 2006)
6. Explaining changes in learning and work practice following the adoption of online learning: a human agency perspective, Tsai-Hsin Chu, Daniel Robey, European Journal of Information Systems 17, 79-98 (25 February 2008)
7. The role of boundaries in knowledge processes, Y Merali, European Journal of Information Systems 11, 47-60 (8 March 2002)
8. The dynamics of IT boundary objects, information infrastructures, and organizational identities: the introduction of 3D modelling technologies into the architecture, engineering, and construction industry, Uri Gal, Kalle Lyytinen, Youngjin Yoo, European Journal of Information Systems 17, 290-304 (24 June 2008)
9. A genealogical study of boundary-spanning IS design , Susan Gasson, European Journal of Information Systems 15, 26-41 (28 February 2006)
10. The conundrum of IT management* , Joe Peppard , European Journal of Information Systems 16, 336-345 (24 October 2007)
11. Use of innovative content integration information technology at the point of sale, Claudia Loebbecke , European Journal of Information Systems 16, 228-236 (28 July 2007)
12. Potential of critical e-applications for engaging SMEs in e-business: a provider perspective, David H Brown, Nigel Lockett , European Journal of Information Systems 13, 21-34 (18 February 2004)
13. Knowledge management and the politics of knowledge: illustrations from complex products and systems, N Marshall, T Brady, European Journal of Information Systems 10, 99-112 (2 October 2001)
14. How organizations adopt information system process innovations: a longitudinal analysis, Erja Mustonen-ollila, Kalle Lyytinen , European Journal of Information Systems 13, 35-51 (18 February 2004)

15. The impacts of competence-trust and openness-trust on interorganizational systems, Mohammed Ibrahim, Pieter M Ribbers , *European Journal of Information Systems* 18, 223-234 (7 July 2009)
 16. Another road to IT turnover: the entrepreneurial path, Gaëtan Mourmant, Michael J Gallivan (Mike), Michel Kalika , *European Journal of Information Systems* 18, 498-521 (30 November 2009) doi:10.1057/ejis.2009.37 Special Feature
 17. Implementing packaged enterprise software in multi-site firms: intensification of organizing and learning, Paul C van Fenema, Otto R Koppius, Peter J van Baalen, *European Journal of Information Systems* 16, 584-598 (29 October 2007)
 18. Reflecting on action in language, organizations and information systems, Pär J Ågerfalk, Göran Goldkuhl, Brian Fitzgerald, Liam Bannon, *European Journal of Information Systems* 15, 4-8 (28 February 2006)
 19. Understanding e-Government project trajectories from an actor-network perspective, Richard Heeks, Carolyne Stanforth , *European Journal of Information Systems* 16, 165-177 (2 May 2007)
 20. Questioning the IT artefact: user practices that can, could, and cannot be supported in packaged-software designs, M W Chiasson, L W Green ,*European Journal of Information Systems* 16, 542-554 (29 October 2007)
-

Journal of Information Technology (JIT) (13 papers)

1. Relationship building and the use of ICT in boundary-crossing virtual teams: a facilitator's perspective, David J Pauleen, Pak Yoong, *Journal of Information Technology* 16, 205-220 (1 December 2001)
2. Special Issue on Global Sourcing: IT Services, Knowledge and Social Capital, Ilan Oshri, Julia Kotlarsky , *Journal of Information Technology* 23, 1-2 (7 March 2008)
3. Operational capabilities development in mediated offshore software services models, Sirkka L Jarvenpaa, Ji-Ye Mao, *Journal of Information Technology* 23, 3-17 (7 March 2008)
4. Exploring knowledge exchange in electronic networks of practice, Eoin Whelan, *Journal of Information Technology* 22, 5-12 (19 December 2006)
5. Moments of governance in IS outsourcing: conceptualizing effects of contracts on value capture and creation, Shaila M Miranda, C Bruce Kavan, *Journal of Information Technology* 20, 152-169 (28 June 2005)
6. Successful knowledge transfer within offshore supplier networks: a case study exploring social capital in strategic alliances, Joseph W Rottman, *Journal of Information Technology* 23, 31-43 (7 March 2008)
7. Anxiety and psychological security in offshoring relationships: the role and development of trust as emotional commitment, Séamas Kelly, Camilla Noonan, *Journal of Information Technology* 23, 232-248 (17 December 2008)
8. Making organizations virtual: the hidden cost of distributed teams, Karin Breu, Christopher J Hemingway, *Journal of Information Technology* 19, 191-202 (13 July 2004)
9. Action in context and context in action: Modelling complexity in multimedia systems development, Brian Webb, Seamus Gallagher, *Journal of Information Technology* 24, 126-138 (13 January 2009)
10. Institutionalizing enterprise resource planning in the Saudi steel industry: A punctuated socio-technical analysis, Kalle Lyytinen, Mike Newman, Abdul-Rahman A Al-Muharfi, *Journal of Information Technology* 24, 286-304 (16 November 2009)
11. Visualization of interfirm relations in a converging mobile ecosystem, Rahul C Basole, *Journal of Information Technology* 24, 144-159 (28 May 2009)

12. Offshore middlemen: transnational intermediation in technology sourcing, Volker Mahnke, Jonathan Wareham, Niels Bjorn-Andersen , Journal of Information Technology 23, 18-30 (29 January 2008)
13. IT alignment and the boundaries of the IT function, Mikko Valorinta, Journal of Information Technology 26, 46-59 (12 October 2010)

Journal Operational Research (JORS) (4 papers)

1. Scaling knowledge: how does knowledge accrue in systems? , J H Powell, J Swart, Journal of the Operational Research Society 59, 1633-1643 (3 October 2007)
 2. Operations management of new project development: innovation, efficient, effective aspects, A H I Lee, H H Chen, H-Y Kang, Journal of the Operational Research Society 60, 797-809 (21 May 2008)
 3. Data envelopment analysis with missing data, T Kuosmanen, Journal of the Operational Research Society 60, 1767-1774 (10 December 2008)
 4. Operational knowledge management: identification of knowledge objects, operation methods, and goals and means for the support function , F Wijnhoven, Journal of the Operational Research Society 54, 194-203 (1 February 2003)
-

Table 3. Information Systems and Management Sciences articles on ‘Spanning Boundary’ and ‘Collaborative Research’ – some examples

Title	Topic of Collaboration (Paper key words)	Examples of applications to Boundary Spanning	Author /Journal
Relationship building and the use of ICT in boundary-crossing virtual teams	effects of crossing organizational, cultural and time and distance boundaries on relationship building in virtual teams	This paper reports on a field study of New Zealand-based virtual team facilitators working with boundary-spanning virtual teams. From a facilitator's perspective, boundary-crossing issues (organizational, cultural, language and time and distance) can affect relationship building in many important ways.	David J Pauleen, Pak Yoong, <i>Journal of Information Technology</i> ,16, 205-220 (1 December 2001)
A genealogical study of boundary-spanning IS design	information system design, actor-network theory, boundary objects, situated design	This study provides much needed rich insights into the complexities of systems definition and negotiation, explaining the situated rationalities underlying IS design as the co-design of business and IT systems. A fifth form of boundary object is suggested by this analysis, which is based on the need to align interests across a network of actors.	Susan Gasson <i>European Journal of Information Systems</i> ,15, 26-41 (28 February 2006)
How organizations adopt information system process innovations: a longitudinal analysis	empirical research, IS development methods and tools, adoption decisions, IS process-innovations	This paper describes how three organizations adopted information system (IS) process innovations (ISPI) using a sample of over 200 adoptions over a period of four decades{..} Within the three organizations, the types and rates of ISPI adoptions varied significantly. These variations can be attributed to learning mechanisms, the influence of legacy platforms and differences in the boundary spanning activities.	Erja Mustonen-ollila, Kalle Lyytinen <i>European Journal of Information Systems</i> ,13, 35-51 (18 February 2004)

References

- Abbott, A. 1988. *The System of Professions: An Essay on the Division of Expert Labor*. Chicago: University of Chicago Press.
- . 2001. *Chaos of Disciplines*. Chicago: University of Chicago Press.
- Bartunek, J. 2007. "Academic-practitioner collaboration need not require joint or relevant research: Toward a relational scholarship of integration." *Academy of Management Journal* 50:1323-1333.
- Baskerville, R. and Myers, M. 2002. "Information systems as a reference discipline." *MIS Quarterly* 26:1-14.
- Bryant, J. 2008. "The future of information systems - Thinking Informatically." *European Journal of Information Systems* 17:695-698.
- Gasson Susan. 2006. "A genealogical study of boundary-spanning IS design", *European Journal of Information Systems* (2006) 15, 26-41
- Gulati, R. 2007. "Tent poles, tribalism, and boundary spanning: The rigor-relevance debate in management research." *Academy of Management Journal* 50:775-782.
- Introna, Lucas D. 2003. "Disciplining information systems: Truth and its regimes." *European Journal of Information Systems* 12:235-240.
- Klein, Heinz K. and Hirschheim, Rudy. 2008. "The structure of the IS discipline reconsidered: Implications and reflections from a community of practice perspective." *Information and Organization* 18:280-302.
- Levina, N. and Vaast, E. 2005. "The emergence of boundary spanning competence in practice - implications for implementation and use of information systems." *MIS Quarterly* 29:335-363.
- McGrath, K. 2005. "Doing critical research in information systems: A case of theory and practice not informing each other." *Information Systems Journal* 15:85-101.
- Napier, N., Keil, M., and Tan, F. 2007. "IT project managers' construction of successful project management practice: a repertory grid investigation." *Information Systems Journal* 19:255-282.
- Porter, Michael E. and Millar, Victor E. 1985. "How information gives you competitive advantage; pp. 149-160 in *Harvard Business Review*, vol. 63: Harvard Business School Publication Corp.
- Pauleen David J and Yoong Pak, 2001 "Relationship building and the use of ICT in boundary-crossing virtual teams: a facilitator's perspective", *Journal of Information Technology* 16, 205-220
- Star, L. and Griesemer, J. 1989. "Institutional ecology, "translations" and boundary objects: Amateurs and professionals in Berkeley's museum of vertebrate zoology, 1907-1939." *Social Studies of Science* 19:387-420.
- Tushman, M., Fenollosa, A., McGrath, D., O'Reilly, C., and Kleinbaum, A. 2007. "Relevance and rigor: Executive education as a lever in shaping practice and research." *Academy of Management Learning and Education* 6:345-362.
- Tushman, M. and Scanlan, T. 1981. "Boundary spanning individuals: Their role in information transfer and antecedents." *Academy of Management Journal* 24:289-305.
- Wenger, Etienne. 1999. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.